62. The process of Claim 61, wherein uniformly reducing the thickness of the planar layer comprises inverting the polarity of the potential that is applied to the substrate.

63. The process of Claim 62, further comprising repeating the steps of applying a potential and reducing the thickness multiple times.

64. A process for forming a conductive material structure on a surface of a substrate in a single process chamber, wherein the surface of the substrate includes a top portion and cavity portions, the process comprising the steps of:

(a) applying an electrolyte solution to the surface of the substrate;

(b) applying a potential to the substrate so as to deposit a planar layer of a conductive material out of the electrolyte solution onto the surface of the substrate including the top portion and into the cavity portions; and

(c) uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material on the top portion is removed.

65. The process of Claim 64, wherein the step of uniformly reducing the thickness of the planar layer of the conductive material comprises inverting the polarity of the potential applied to the substrate.

66. A workpiece comprising:

a conductive area

an insulator disposed over the conductive area;

at least one opening disposed in the insulator; and

a conductive layer disposed within the opening, thereby establishing electrical contact with the conductive area, the conductive layer having a top surface and being formed by:

providing a conductor disposed over the insulator and within the opening;

disposing an electrolyte solution with a conductive material on the conductor and within the opening;

applying a potential difference between the workpiece and an anode so as to deposit a planar layer of said conductive material out of the electrolyte solution onto the conductor and within the opening; and

uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material and the conductor on top of the insulator are removed.

67. A process for forming a conductive material structure on a surface of a substrate in a single process chamber, wherein the surface of the substrate includes a top portion and cavity portions, the process comprising the steps of:

(a) applying an electrolyte solution to the surface of the substrate;

(b) applying a potential to the substrate so as to deposit a planar layer of a conductive material out of the electrolyte solution onto the surface of the substrate including the top portion and into the cavity portions;

(c) uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material on the top portion is removed; and

(d) depositing the conductive material on top of the layer that is left in the cavity portions.

68. The process of Claim 67, wherein the step of uniformly reducing the thickness of the planar layer of the conductive material comprises inverting the polarity of the potential that is applied to the substrate.

69. A process for forming a conductive material structure on a surface of a substrate in a single process chamber, wherein the surface of the substrate includes a top portion and cavity portions, the process comprising the steps of:

(a) applying an electrolyte solution to the surface of the substrate;

(b) applying a potential to the substrate so as to deposit a planar layer of a conductive material out of the electrolyte solution onto the surface of the substrate including the top portion and into the cavity portions;

(c) uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material on the top portion is removed; and

(d) depositing conductive material on the top of the planar layer that is left in the cavity portions so as to form a first structure.

70. The process of Claim 69, wherein the step of uniformly reducing the thickness of the planar layer of the conductive material comprises inverting the polarity of the potential that is applied to the substrate.

71. The process of Claim 70, and further comprising subjecting the first structure to heat treatment to induce grain growth in the first structure.

72. The process of Claim 71, and further comprising uniformly reducing the thickness of the first structure through chemical mechanical polishing such that the conductive material of the first structure is flush with the top portion.

73. A workpiece comprising:

a conductive area;

an insulator disposed over the conductive area;

at least one opening disposed in the insulator; and

a structure formed within the opening, thereby establishing electrical contact with the conductive area, the structure having a top surface positioned higher than the top of the insulator and being formed by:

providing a conductor disposed over the insulator and within the opening;

disposing an electrolyte solution with a conductive material on the conductor and within the opening;

applying a potential difference between the workpiece and an anode so as to deposit a planar layer of said conductive

material out of the electrolyte solution onto the conductor and within the opening;

uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material and the conductor on top of the insulator is removed; and

depositing the conductive material on top of the conductive material that is left in the opening so as to form the structure.

74. The workpiece of Claim 73, further comprising subjecting the structure to heat treatment to induce grain growth in the structure.

75. The workpiece of Claim 74, and further comprising uniformly reducing the thickness of the structure using chemical mechanical polishing such that the conductive material of the structure is flush with the top of the insulator.

76. A workpiece comprising:

a conductive area;

an insulator disposed over the conductive area;

at least one opening disposed in the insulator;

a conductive layer disposed within the opening, thereby establishing electrical contact with the conductive area, the conductive layer having a top surface and being formed by:

providing a conductor disposed over the insulator and within the opening;

disposing an electrolyte solution with a conductive material on the conductor and within the opening;

applying a potential difference between the workpiece and an anode so as to deposit a planar layer of said conductive material out of the electrolyte solution onto the conductor and within the opening;

uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material and the conductor on top of the insulator is removed;

depositing the conductive material on top of the conductive material that is left in the opening so as to form a first structure;

subjecting the first structure to heat treatment to induce grain growth in the first structure; and

uniformly reducing the thickness of the first structure such that the conductive material of the first structure is flush with the top portion of the insulator.

77. A process for forming a conductive material structure on a surface of a substrate in a single process chamber, wherein the surface of the substrate includes a top portion and cavity portions, the process comprising the steps of:

(a) applying an electrolyte solution to the surface of the substrate;

(b) applying a potential to the substrate so as to deposit a planar layer of a conductive material out of the electrolyte solution onto the surface of the substrate including the top portion and into the cavity portions;

(c) uniformly reducing the thickness of the planar layer of the conductive material such that the conductive material on the top portion is removed;

(d) depositing the conductive material on the top of the planar layer that is left in the cavity portions so as to form a first structure wherein the step of depositing the conductive material is terminated when the size of the deposited material reaches a first predetermined size; and

(e) continuing to deposit the conductive material on top of the first structure so as to form a bead structure having a second predetermined size wherein the second predetermined size is larger than the first predetermined size.

78. The process of Claim 77, wherein the step of uniformly reducing the thickness of the planar layer of the conductive material comprises inverting the polarity of the potential that is applied to the substrate.

79. The process of Claim 78, and further comprising subjecting the bead structure to heat treatment to induce grain growth in the bead structure.

80. The process of Claim 79, and further comprising uniformly reducing the thickness of the bead structure through chemical mechanical polishing such that the conductive material of the bead structure is flush with the top portion.

81. A process for forming a planar conductive material structure on a surface of a substrate in a single process apparatus, wherein the surface of the substrate includes a top portion and cavity portions, the process comprising the steps of:

(a) applying an electrolyte solution through a pad to the surface of the substrate while applying a first negative potential to the substrate so as to deposit a layer of a conductive material out of the electrolyte solution onto the surface, wherein the pad is positioned at close proximity to the surface;

(b) applying the electrolyte solution through the pad to the surface of the substrate while applying a second negative potential, wherein the pad is contacted to the surface while the pad and the surface are moved relative to each other thereby yielding a planar layer; and

(c) reducing the thickness of the planar layer in a planar manner while continuing to apply the electrolyte solution to the surface of the substrate and while applying a positive potential to the substrate;

wherein the first and the second potentials can have equal or different magnitudes.

82. The process of Claim 81, wherein the step of applying the electrolyte solution through the pad to the surface of the substrate while applying the first negative potential comprises depositing the conductive material into at least some of the cavities on the surface of the substrate.

83. The process of Claim 81, wherein the step of applying the electrolyte solution through the pad to the surface of the substrate while applying the second negative potential comprises depositing the conductive material into all of the cavities on the surface of the substrate in a planar manner.

84. The process of Claim 81, wherein the step of reducing the thickness comprises removing the conductive material when the pad is positioned at close proximity to the surface.

85. The process of Claim 81, wherein the step of reducing the thickness comprises removing the conductive material when the pad is contacted to the surface while moving on the surface.

86. The process of Claim 81, wherein reducing the thickness of the planar layer comprises forming conductive material deposits only in the cavities.

87. The process of Claim 81, further comprising the step of annealing of the conductive material after the step of reducing the thickness of the planar layer.--